Creativity enhancing feelings, creativity methods and techniques

– how to support the creativity of young designers?

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May 2019

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Taiteen kandidaatin opinnäytteen tiivistelmä

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Työn nimi Creativity enhancing feelings, creativity methods and techniques – how to support the creativity of young designers?

Laitos Department of design

Koulutusohjelma Design major

Vuosi 2019 **Sivumäärä** 51 **Kieli** English

Abstract

This thesis aimed at identifying key feelings as well as creativity methods and techniques that would support young designers´ creativity. Research was qualitative and the methods for conducting analysis were literature review and interviews with six students and five experienced design managers.

Literature review and interviews show that feelings influence young designers´ creativity, some of them being strongly inborne and some dependable on management style and company culture. Seven groups of feelings were identified: *peace of mind, welcomed pressure, openness, positivity, trust, self-confidence* and *sense of community: Peace of mind* refers to limiting the physical and mental disturbances and giving room for creativity and concentration. *Welcomed pressure,* on the other hand, refers to the balance between idleness and stress. *Openness* means allowing the inflow of information, being curious and alert and seeking actively after inspiration, whereas *positivity,* being excited, passionate and cheerful is based on the content of work and the working environment. *Trust* is a necessity of all idea sharing and s*elf-confidence* helps young designers to trust in own capabilities. *Sense of community* is an interesting study area of creativity for the future; how to transform from an individualistic “me” designer into a team player?

The creativity methods and techniques were discussed in four categories, which reflect the situations of use: *information gathering, setting up optimal mood, working on object* and *human interaction*. Used methods seem to be individual adaptations of commonly known methods; many of them are used for processing in mind. It depends on the situation, personality and the assignment, which ones to use and young designers should, therefore, collect a personal creativity tool kit. Different methods work in interaction, in a cycle or even parallel. Interesting findings were e.g. autosuggestion, controversial opinions regarding the visualization software, use of NLP (Neuro Linguistic Programming) technique in visualization and the value of casual brainstorming with friends. Many interviewees saw technology more as a thread than a source of creativity. However, it is recommended that young designers keep the possibilities of e.g. artificial intelligence on eye.

Feelings and creativity methods and techniques are linked to each other. The better young designer manages the methods and techniques, the better she copes in demanding multitasking environments and under pressure; leading to relaxation and creativity. Feelings, on the other hand, support the successful application of the methods and techniques; you need right conditions to optimally apply them. It is possible to utilize the results of this thesis in companies and education institutions in order to get the whole creative potential of young designers into practice. Based on the results, creativity of a young designer is not dependable on the industry. Instead, it seems possible to build up an organization that is supporting young designer´s creativity in any field, if the content of work is aligned with young designer´s values.

Avainsanat design, young designer, creativity, feelings, methods, techniques, mood, tools

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Työn nimi Luovuutta edistävät tunteet, metodit ja tekniikat – miten tukea nuorten muotoilijoiden luovuutta?

Laitos Muotoilun laitos

Koulutusohjelma Muotoilu

Vuosi 2019 **Sivumäärä** 51 **Kieli** Englanti

Tiivistelmä

Tämän kandidaatintyön tavoite oli identifioida, mitkä tunteet ja luovan työn edistämiseen tarkoitetut metodit ja tekniikat parhaiten tukevat nuoren muotoilijan luovuutta. Tutkimus oli kvalitatiivinen ja tutkimusmenetelminä käytettiin kirjallisuuskatsausta sekä haastatteluja, joihin osallistui kuusi opiskelijaa sekä viisi kokenutta muotoilutiimin vetäjää.

Kirjallisuuskatsaus sekä haastattelut osoittavat, että tunteet vaikuttavat nuoren muotoilijan luovuuteen. Osa tunteista on henkilösidonnaisia ja osa riippuu johtamistyyleistä ja yrityskulttuurista. Työssä identifioitiin seitsemän tunneryhmää: *mielenrauha, tervetullut suorituspaine, avoimuus, positiivisuus, luottamus, itsevarmuus* ja *yhteisöllisyyden tunne*.

Mielenrauha viittaa fyysisten ja psyykkisten häiritsevien tekijöiden rajoittamiseen. *Tervetullut suorituspaine* viittaa stressin ja joutilaisuuden väliseen tasapainoon. *Avoimuus* tarkoittaa avoimuutta tietovirroille, uteliaisuutta, tarkkaavaisuutta sekä inspiraation etsimistä. *Positiivisuus*, kuten iloisuus, innostuneisuus ja intohimoisuus perustuvat työn sisältöön ja työympäristöön. *Luottamus* on ideoiden jakamisen edellytys. *Itsevarmuus* auttaa nuorta muotoilijaa luottamaan omiin kykyihinsä. *Yhteisöllisyyden tunteen* merkitys luovuudelle on kiinnostava tulevaisuuden aihealue; miten kuoriutua yksilökeskeisestä ”minä” -muotoilijasta tiimipelaajaksi?

Luovuutta edistävät metodit ja tekniikat käsiteltiin neljän kategorian kautta, jotka heijastavat käyttötilannetta: *tiedonkeruu, optimaalisen mielialan luominen, kohteen työstäminen ja vuorovaikutus*. Käytetyt metodit osoittautuivat muunnelmiksi yleisesti tunnetuista; osaa käytetään vain mielessä prosessointiin. Riippuu tilanteesta, muotoilijan luonteesta ja tehtävästä, mitä kannattaa käyttää ja suositeltavaa on kerätä henkilökohtainen työkalupakki. Eri metodit toimivat yhdessä, syklissä tai jopa samanaikaisesti. Mielenkiintoisia löydöksiä olivat mm. itsesuggestio, eriävät mielipiteet visualisointiohjelmistojen mahdollisuuksista, NLP-tekniikan (Neuro Linguistic Programming) käyttäminen visualisoinnissa sekä vapaa-ajan aivoriihen hyödyllisyys ystävien kanssa. Monet haastateltavat näkivät teknologian pikemminkin luovuuden uhkana kuin mahdollisuutena. Tästä huolimatta nuorien muotoilijoiden kannattaa seurata aktiivisesti esim. tekoälyn tarjoamia mahdollisuuksia.

Tunteet ja luovuutta edistävät metodit ja tekniikat ovat vuorovaikutuksessa toisiinsa; mitä paremmin hallitaan menetelmät ja tekniikat, sitä paremmin selviydytään vaativissa multitasking-työympäristöissä ja paineen alla; johtaen parempaan itseluottamukseen, rentoutumiseen ja luovuuteen. Tunteet tukevat menetelmien ja tekniikoiden käyttöä, koska niiden soveltamiseen tarvitaan oikeat olosuhteet. Tämän työn tuloksia on mahdollista soveltaa yrityksissä ja koulutusyksiköissä, jotta nuorten muotoilijoiden koko luova työpanos saataisiin käyttöön. Tutkimus osoittaa, että nuoren muotoilijan luovuus ei ole riippuvainen alasta, kunhan työ on linjassa nuoren muotoilijan arvojen kanssa.

Avainsanat muotoilu, nuori muotoilija, luovuus, tunteet, metodit, tekniikat, mieliala

Contents

1. Introduction

My personal interest in creativity was awaken during my bachelor design studies at Aalto University. Design industry is facing changes as the artificial intelligence and its applications conquer new areas. In this development cycle it is inevitable that creativity of a designer will be a highly wanted asset in the future. World Economic Forum has recently listed creativity as the third important skill in job market in 2020 (Desjardins/WEF 2019).

As a design student I have also had the opportunity to observe how design students are choosing to express their creativity and how creativity, overall, is taught in design major. Two questions have caught my attention: how different kinds of feelings might affect the creativity of the students, and what kind of methods could be used in supporting their creativity?

I have noticed that many talented students choose to study ceramics or glass instead of industrial design, which is seen narrower in regards of creativity and the freedom of artistic expression. By no means seeing glass or ceramic work as of lower importance, this early orientation is, however, narrowing down the scope of future employment areas and might fear great talent away from career paths that could lead to influential positions in industries that would greatly benefit of innovative ideas and perspectives. At the end, the means of creative expression, like painting patterns, shaping clay or sketching the form of a glass object, are only intermediaries that can be utilized also in industrial design and service design.

Furthermore, the gap between design practices is, from my own point of view, unnecessary and old fashioned. By wanting to detach the creative scope away from some specific field of design, I decided to focus my thesis on the variety of feelings that drive young designers´ creativity. By identifying these feelings, it will be possible to see if any field of design can offer a lucrative basis for the young designers´ desire to utilize and express their creative potential. The awareness of these drivers for creativity would, in addition, ensure that any company employing designers could take them into consideration in management practices, resulting in the full utilization of the company internal creative potential. Personally, I believe all design students at Aalto University have great diversified creativity potential, and because of this I have selected the feelings as the focus area, instead of analyzing personality traits.

In addition, I have had an opportunity to observe, to some extent, how the students are conducting ideation within the design projects, and how ideation methods are taught at the University. In fact, several of the most known ideation methods come up in the program, but many of them have appeared to me as pure information gathering or building practical skills. It was not until I visited a course in setup design in the movie department that I found good ways to enhance my personal ideation process. As a result, I am curious to find out what kind of ideation methods the design students and design managers find the best and what kind of methods could work best for a young designer. This information would benefit the training and management practices in companies employing designers as well as Aalto University in developing the content of the design courses. After all, the variety of different design methods and techniques labelled today as “creativity enhancing” is enormous and finding the most valuable ones would benefit us all.

2. Goals, scope and approach of the thesis

The first goal of the thesis is to determine what kind of feelings are the most important ones for enhancing the creativity of young designers. The second goal of the thesis is to identify such creativity methods and techniques that have been found good in practice and which could work well for young designers in enhancing their creativity.

Approach in the thesis is qualitative and the methods for conducting the research are literature review and, most importantly, interviews. Through the two goals, this thesis is trying to shed light on the conditions, where creativity has the most optimal ground to grow. These conditions could give companies and education institutions a hint on how to treat and train students and junior members of the design team.

Even though the study results might be applicable for other subject areas and a wider age group, the main target group of this thesis is young designers, meaning design students and graduated designers under 30 years old. Because the object of the thesis is to reach wide perspective on the subjects, the field of design is not restricted and includes traditional design fields as well as industrial design, service design and concept design. However, the thesis stays on a general level and does not include any analysis of those fields separately.

To be noticed is that due to the limitations of scope, this thesis is not taking design processes or creative processes into consideration, but discusses the creativity enhancing feelings and creativity methods and techniques on a general level.

3. Research methods

In the following chapters the methods used in the thesis, namely literature review and qualitative field work, are shortly described.

3.1 Literature review

Literature review was conducted through publications in the fields of creativity theories, creativity in design and creativity management. Further literature was collected in form of articles and books on creativity methods, techniques and tools in design as well as on feelings, emotions and moods in design and in creativity. Due to the classic topic and old models that are relevant still today, references are partly old; most of the material has been, however, published after year 2000.

3.2 Qualitative field work

The qualitative field work of this thesis consisted of 11 interviews. Two types of interviewees were recruited. First type of interviewees were persons, who are currently or have been leading a design team in a company of a bigger scale. This group consisted of Karske Joakim (MA), Kolinen Petteri (MA), Miettinen Eero (MA), Mäkelä Marjukka (MA) and Stenros Anne (D Arch). The second group of six interviewees were bachelor students of design in their third or fourth year at Aalto University. These interviewees are referred to as student A, student B, student C, student D, student E and student F. In the text they are referred to as she/her to increase anonymity. The average age of the students was 24 years and the median age was 22 years. In this thesis the first group will be referred to as the *experienced interviewees* and the second group as the *students*. The interviews were conducted face to face within February and March in 2019 and each of them had a duration of approximately 1 to 1,5 hours. Interviews were held in various settings from office to a coffee house, mostly depending on the interviewees´ preferences and time available.

The interview consisted of two parts. First part was focusing on the feelings that enhance the creative work and the second part on the creativity methods and techniques used for enhancing creativity. The interview guideline can be seen in Appendix 1. The interviews for the two groups were similar consisting of mainly open questions; questions for the students were adapted to their life stage and the fact that they might not have working experience. Content was held close to each other to be able to compare the results. Open questions were intended to prompt perspectives that were perhaps not taken into consideration in interview planning. The participants were, in addition, asked to draw with color markers, to select adjectives from a list and to choose icons from an icon template. The purpose of the drawing and alternating approaches was to let participants think about the subject visually and to express refreshing angles to the discussion. Interview was conducted from open questions towards closed ones to avoid any indirect initiating.

In the first part the aim was to find out, how the feelings of a young designer affect her creativity and which types of feelings could improve the creativity. Besides the open questions, interviewees were asked to select (from a list) four adjectives as prerequisites of creativity for a young designer (Appendix 2) (later referred to as the *prerequisites questionnaire*). Furthermore, they were asked to draw a picture to illustrate their ideal creative space. Experienced interviewees were asked to do this also from a perspective of a young designer.

The aim of the second part of the interview was to identify the most relevant creativity methods and techniques that the interviewees themselves use or find valuable for a young designer. They were also asked to comment some ideation techniques, which were *reframing, brainstorming, mood board, user journey mapping, co-design workshop, doing mockups and video prototyping*. These techniques were selected into the discussion as they differ from each other, are used in different contexts and are commonly known. All interviews were closed with a playful task of selecting three icons (Appendix 3) for enhancing the creativity of young designers (later referred to as *icon selection*). Students were asked to do the selection for themselves.

4. Definitions and theoretical background

In the following chapters the theoretical background of this thesis is presented, and key terminology is clarified.

4.1 Creativity and design

Evolutionary models of creativity are very old and go back to Charles Darwin (C. Martindale, 2009). Even before Darwin, a British psychologist, Bain, proposed the first neural-network theory of mind. C. Martindale (2009, p. 112) describes how Bain (1855) takes it for granted that one must have the right ideas to combine in order to arrive at a creative idea. He ascribes creativity to trial and error: “Bain does not say anything about the mental environment most conducive to creative thought, but stresses that a “fanatical” interest in a topic is necessary in order to arrive at a creative solution.” (C. Martindale, 2009)

Popular works on creativity, such as Koestler´s (1964) *The act of creation* and de Bono´s (1967) *The use of lateral thinking*, have drawn a distinction between the type of thought that makes creativity possible and “normal” thought. Koestler characterized creativity as the intersection of two normally distinct matrices of thought. De Bono distinguished between vertical thinking and the domination of particular concepts, and lateral thinking, which recognizes and moves away from dominant concepts. Rothenberg (1979) presented a similar but perhaps more restrictive theory, suggesting that creative thought stems from either simultaneous opposition, referred to as Janusian thinking, or the conception of two or more discrete entities occupying the same space, referred to as homospatial thinking. (S. McLaughlin 1992, p. 48)

S. McLaughlin (1992, p. 48) describes how some researchers gave opposing theories to those trying to distinguish creative thought processes from normal thought processes, for example Weisberg (1986), Hebb and Donderi (1987), Murray (1986) and Schön (1969). According to him, Weisberg pointed out that creativity is problem solving and the challenge lies in acquiring right information. Interestingly, he also notes that Hebb and Donderi suggested that creativity, or insight, is a function of mediating processes.

There exist highly specific definitions of creativity depending on the scientific domain: “In neuropsychological terms a creative process can be understood as the autonomous formation of new activation patterns in the brain, recombining already existing self-activating loops. Production of something new from existing prerequisites is not restricted to a creative personality but happens all the time.” (Hebb, 1958 ref. T. Takala 1992, p. 93) On the other hand biologists see that creativity is an attribute of all life and that it is the mind´s morphogenetic tendency to build organized structures out of chaos. (Sinnott, 1959 ref. T. Takala 1992, p. 93)

T. Takala (1992, p. 91–94) describes how creativity can be seen as the person´s capability to produce something new, unexpected, recognizable and novel. In addition to art and science, it can appear in everyday life. He states that strong internal motivation is needed to be able to start a creative process. Interestingly, he also sees that creativity is not only the capability to solve problems, but it includes the tendency to seek or produce problems, in order to get pleasure from solving them.

M. Bruce (2009, p. 39-43), a bit similarly, sees creativity as a way of thinking differently, letting novel ideas come to the fore and as an ability to combine ideas in new ways to solve problems and exploit opportunities. He thinks that experimentation, play and doing are central to the creativity element of design and he sees the interplay between conscious and rational thought and unconscious and dream like activity in the core of it. Importantly, he points out that for people to be creative, they need the space and time to conduct activities enabling both modes of thinking.

Many researchers have defined creativity as the ability to produce work that is novel, high in quality and appropriate to the task at hand. Quite similarly, but not identically M. Boden (2009, p. 179-180) describes creativity as follows: “Creativity is the ability to generate ideas that are novel, surprising and valuable.” She defines novelty, first with respect to the person and system concerned and, second with respect to the whole of human history. She defines that an idea can be surprising in three ways: first, it can be statistically surprising. Second, it can be surprising to see that something was possible all along and we just didn’t realize it. Third, an idea might seem impossible given the previous way of thinking. Valuable is a difficult term, she admits, because it can be judged from different angles, for example, scientific domains, social groups, historical factors or famous persons.

Most of the above described definitions and viewpoints apply in this thesis. The output of creative process is defined similarly as above M. Boden; novel, surprising and valuable. It can be further defined that creative and normal thought processes are not separate and that all designers, and all other forms of live, have creativity potential, to varying degree. It depends on certain conditions, how well this potential is utilized. In this thesis, of those conditions, feelings that are present and the actively used creativity methods and techniques, are under analysis.

Use of the lateral thinking (de Bono) as a creativity method can be regarded as a part of those conditions, as well as the domain and field of M. Csikszentmihalyi´s (1997, p. 2) flow theory: “The level of creativity in a given place at a given time does not depend only on the amount of individual creativity. It depends just as much on how well suited the respective domains and fields are to the recognition and diffusion of novel ideas.”

4.2 Feelings and creativity in design

Improving the organizational climate for creativity and innovation can promote effective problem solving in a company, and often increases a company´s productivity and competitiveness (I. N. Dubina 2007, p. 160). Many companies recognize that they need to create physical, temporal and mental space if they want their employees to be creative (M. Bruce 2009, p. 44). Here mentioned organizational climate and mental space are directly related to the thoughts, feelings, mood and emotions of the designers.

For example, in the research paper of N. F. M. Yusof (2016), design process was studied to determine if the subjects’ thoughts (mood states) at the start of process have effect on creativity. Creativity output was evaluated through three criteria: fluency, originality and expansion. Subjects were first induced into different mood states and at the end the correlation between the mood states and the idea creativity scores

were determined. The induced mood states were positive activating, positive deactivating, negative activating and negative deactivating. The results showed that positive activating mood state had significant effect to the fluency, (smooth thinking and many ideas), expansion (number of categories considered) and originality (uncommon non-overlapping ideas).

In another work of L. de Napoli (2018) a similar design experiment was done through visual humorous stimulation. The results showed that the values of creativity, assessed by means of TTCT (Torrance Test of Creative Thinking) method, were higher for the concepts obtained using humorous visual stimulation than for those without. The rated values were (according to TTCT) fluency (number of ideas), flexibility (number of categories), originality (statistical rareness) and elaboration (amount of details). Interestingly, visual humorous stimulation could not reach the highest values in originality.

It is not at all clear how the wide spectrum of feelings enhance creativity. M. A. Davis (2008) points out that even though some researchers have made the conclusion that positive mood promotes creative thinking, there are findings that contradict this opinion. However, according to him, there is a general agreement that creative tasks are mood sensitive.

For the purpose of this thesis the attribute *mood* is seen too narrow and *emotion* too difficult to assess as it is a physical phenomenon. Therefore, this thesis uses the attribute *feeling* (in Finnish *tunne*) in assessing the ideal conditions of young designers for a creative task. Feeling is here defined as (K. R. Scherer, 2005) the subjective cognitive representation that reflects a unique experience of mental and bodily changes. The noun *mood* on the other hand is used in the categorization of the methods and techniques (chapter 7). In this context mood is defined as (K. R. Scherer, 2005) diffuse affect states that are characterized by a relative enduring predominance of certain types of subjective feelings that affect the experience and behavior of a person.

Mood, emotions and feelings appears to be a less researched area in design. The concept of flow of M. Csikszentmihalyi (2014) is a significant contributor in this area of creativity and it has been applied in design. In his concept a person can achieve the flow state through a balance between action opportunities and action capabilities. Different combinations of these challenges and skills are creating different mental status; anxiety, apathy, worry boredom, arousal, control and relaxation. In this thesis, however, the flow theory is not used as a reflection tool as it concentrates on emotions in certain phases of the creative work; this study analyzes feelings, as a general condition at the base of the creative work.

4.3 Creativity methods and techniques in design

Like M. Bruce (2009) mentioned, some companies are trying to offer stimulating methods and techniques for designers. Design theory offers a variety of methods and techniques to enhance creativity, but there are either narrowly concentrated research papers or catalogue kind of hand books presenting over 100 ideation methods. It would be valuable to identify the pearls from this ocean, because creativity methods, techniques and tools form the base for design processes.

T. Takala describes how a creative mind applies divergent or lateral thinking, thus, looks the problem from

different points of view. According to him, de Bono (1967) described lateral thinking as: “not digging the hole deeper but digging in a new place”.

> *“Creativity enhancing techniques, like brainstorming and synectics, intentionally do this by leaving away critics for a moment, producing many partial solutions and new associations between seemingly unrelated things. Gradually the views are then enlarged, until they finally cover all the relevant facts.”* (T. Takala 1992, p. 96)

Edward de Bono invented the concept of lateral thinking in 1967 and it has had a significant effect on creativity theories and ideation techniques. E. de Bono (1970) describes in his book:

> *“Lateral thinking can be deliberately perverse. With lateral thinking one tries to look at the least obvious approaches rather than the most likely ones. It is the willingness to explore the least likely pathways that is important for often there can be no other reason for exploring such pathways. At the entrance to an unlikely pathway there is nothing to indicate that it is worth exploring and yet it may lead to something useful. With vertical thinking one moves ahead along the widest pathway which is pointing in the right direction.”*

E. de Bono has introduced a variety of problem solving and idea generation techniques, which are widely used in different contexts and industries: “As opposed to other methods for idea generation, lateral thinking may be used not only for problem solving but also for design purposes and for constructive thinking. ---- It furthermore implies the possibility of utilizing simple methods for a wide range of individuals to generate ideas on demand within a short timeframe.” (S. Dingli 2009, p. 338) Thus, de Bono believes that we are all born to be creative, if we are able to apply suitable methods and techniques, like lateral thinking.

Use of the terminology of creativity methods, techniques, tools and approaches in design is sometimes unclear and causes confusion. Löwgren and Stolterman (2004, p. 63, ref. Biskjaer et al. 2017) distinct between design methods and techniques as follows: “A technique is smaller in scope and ambition than a method and is frequently related to a particular form of expression or execution, as in the visual arts where pencil and charcoal can be categorized as techniques. A method may comprise several steps to be carried out in different techniques, or allow for the choice of different techniques in accomplishing a certain outcome”. Biskjaer et al. (2017) define creativity method as follows: “a creativity method in design is a well-specified repeatable procedure that through the combination of relevant tools, toolkits, and techniques aims to bring about a perceptible product that is novel and useful as defined within a specific design context.”

E.B.N. Sanders et al. (2010 p. 196, ref. Biskjaer et al. 2017) distinguish between tools (material components used), toolkit (a combination of tools used for a specific purpose), technique (a description of how tools and toolkits are put into action), method (defined as “a combination of tools, toolkits, techniques and/or games that are strategically put together to address defined goals within the research plan”) and finally approach (the overall mindset). In this thesis we follow the definitions of E. B. N. Sanders et al. with the distinction that a technique is regarded as a limited and simpler version of a method.

Creativity methods have been analyzed from different perspectives. For example, M. M. Biskjaer et al.

(2017) analyzed them through conceptual aspects (how ideas and concepts emerge and transform) and through design space (conceptual space encompassing the creativity constraints). The conceptual categories they used were combination, metaphor and analogy and in design space the categories were framing, divergence and convergence. In this thesis creativity design methods, techniques and tools are discussed in groups based on the creative process of Wallas. Wallas (1926) distinguishes four phases in the creative process (ref. T. Takala 1992, p. 92) and his work has been an inspiration for various process models since:

1) Preparation, the collecting of facts related to the problem, and their analysis from different points of view,

2) Incubation, subconscious organizing processes while the subject is not concentrating in the problem, but doing something else,

3) Illumination, sudden appearance and recognition of the solution,

4) Verification, deepening and detailing the solution by comparing it against various constraints and requirements of the problem.

E. Sadler-Smith (2015) sees that the work of Wallas is a pragmatic book concerned with the improvement of thinking: “Several suggestions for enabling and enhancing creative thinking stem from Wallas’ five stages. Distraction, mental relaxation, and physical exercise help to control incubation and facilitate illumination. Becoming more aware phenomenologically of sensibilities and creative intuitions as they arise focuses attention on intimations.” He sees that Wallas had, actually, five stages in his concept, where intimation as a fifth stage resembles intuition.

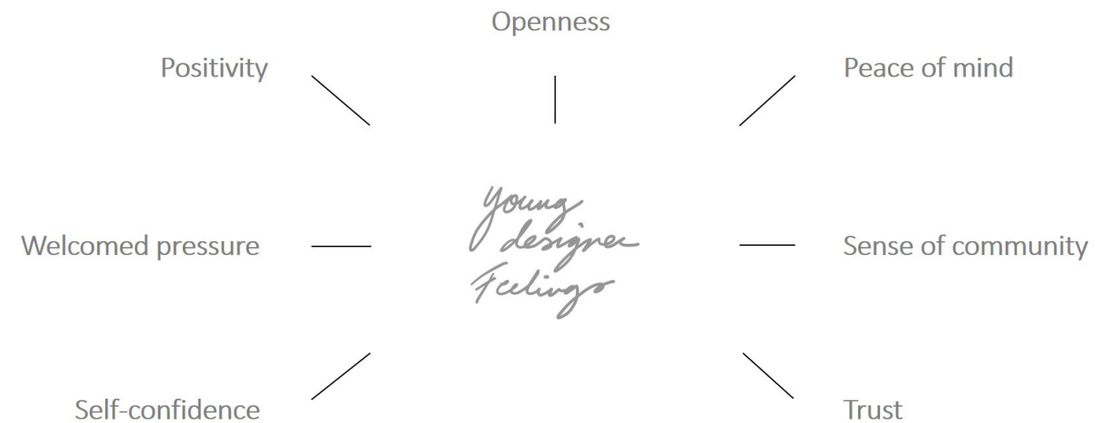
Wallas model is a fruitful base for discussing the way, how designers could achieve high creativity in the design process. Therefore, in this thesis (chapter 7) this classification is used with slight adaptation:

- Preparation is adapted to *information gathering*
- Incubation is adapted to *setting up the optimal mood*
- Verification is adapted to *working on object*

Categories are not in any order as this thesis is not analyzing the process itself. Illumination and intimation are very hard to connect to any specific method, tool or technique, because of their momentary and sudden nature and, therefore they are not used in classification. Instead, a fourth category is formed under *human interaction*, because ideation taking place in a group or in another social context is in the core of creativity. For example, according to M. Bruce (2009, p. 44) research shows group creativity to be a more powerful resource, than that of individuals because of the interplay and mutual stimulation of ideas produced from the mix of people of different backgrounds, experience and personality. He points out that they see a problem in different ways and have different angles in approach; this might bring out unexpected outcomes.

5. Feelings that enhance creativity

This chapter concentrates on describing the different feelings that enhance young designer´s creativity. Based on the interviews seven groups of feelings were identified as the main enhancers of creativity for young designers. Different aspects that came up in the interviews were broken down, analyzed and categorized into these homogenous subject areas, in this thesis they are named as *groups of feelings*. These groups are illustrated in picture 5.1. They are *peace of mind, welcomed pressure, openness, positivity, trust, self-confidence* and *sense of community*. In the following chapters each of these is discussed.



Picture 5.1 Feelings that enhance the creativity of a young designer

In Appendix 4 you can see, how many votes each of the adjectives received in the questionnaire on the prerequisites for young designers´ creativity. This questionnaire, however, worked only as a supportive information in categorization as it did not include the whole spectrum of feelings that eventually came up in the interviews.

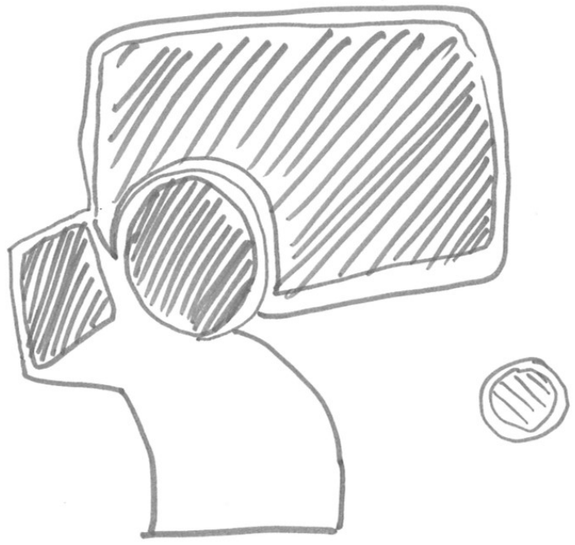
Interestingly, four interviewees responded in the beginning of the interview that it hasn’t such an essential meaning how one feels before starting a creative task. However, after warming up these persons did describe quite in detail what kind of feelings support their and young designers´ creativity. It also came out that some of these interviewees used techniques to get smoothly over any contradictory feelings, and two interviewees saw creative work as a possible escape from problems or as therapy.

5.1 Peace of mind

Young designer needs to be given room for creativity and concentration. Even though there was no direct question on peace of mind in the interview, eight of eleven interviewees took up the subject proactively. General opinion highlighted the need for an undisturbed space and peace for thinking. Peace of mind can be seen in the drawing of student A (2019) in picture 5.1.1, where the small circle on the right presents the outside world, which is distant and not interfering in the creative work between the designer (bigger circle), the tool (computer, square) and her mind (the bubble), which are intertwined in a flow. Another example is the drawing of student D (2019) in picture 5.1.2, where a lot of opportunities are growing in a well-framed space and within a balanced mind, ready to be picked up.

Two interrelated perspectives on peace of mind can be identified. First and most evidently, the general noise level in the working space needs to be low and all the physical occurrences of disturbance, like someone interrupting your work, should be kept in minimum. Second, the peace of mind should exist mentally. Thus, any other issues intruding or stimulating your mind, such as other tasks and duties are distracting you and compromising the level of creative output. These disturbances could be related both to work or private life.

Consequently, multitasking that the working life of today is requiring and taking as an unquestionable norm, is endangering the young designer´s creativity. This is evident already during the studies, when the courses are running at the same time affecting negatively the creativity of the deliverables. For example, Miettinen (2019) stated that “It is liberating if one is allowed to set other tasks aside and can concentrate on one assignment”.

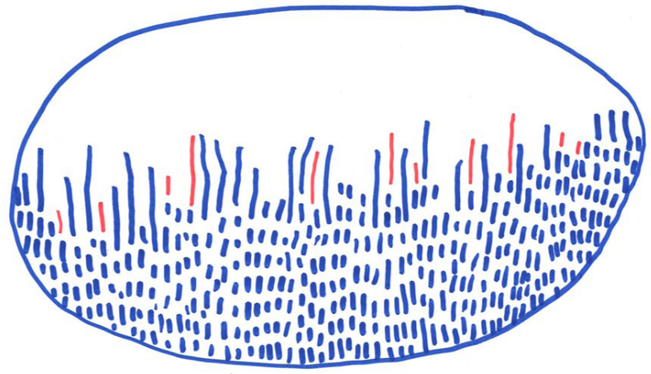


Picture 5.1.1 Creative space of student A (2019)

Many students brought up how valuable it is that the assignment is well framed, there are clear tasks and good instructions. Thus, unclear or absent objectives, conflicting guidelines and communication problems will result in decreased creativity. Kolinen (2019) pointed out that management is the prerequisite for successful creative work. According to him, there needs to be clear processes, where designer knows the boundaries and, within those boundaries she can have full concentration. It is the management´s responsibility to ensure room for creativity by keeping any disturbances away from the young designer.

As a concrete example of the effect of physical and mental disturbances, two interviewees (Kolinen 2019, student F 2019) mentioned experiencing high level of creativity in a transport vehicle, like a train or an airplane. In a transport unit you are less expected to deliver results, you are prevented from certain tasks and not seeing any unfinished work around you. Furthermore, student C (2019) revealed that working in the ceramics workshop was best in the evenings, when there were only few other students. For him it was also the best to have an empty table to start with, both physically and mentally. Furthermore, for many students it seemed important how home was organized if the creative work was to be conducted there; how the furniture pieces and articles on the table were placed and if housework was done.

Personality differences influence the extend, to which one tolerates distractions. According to Karske (2019), some designers even need a constant hum. He also pointed out that it is the management´s responsibility to offer young designers adaptable working conditions and that the multitasking capabilities would increase after gaining working experience. Karske and Mäkelä (2019) did not see multitasking that problematic personally. Karske has the parallel tasks running unconsciously on the background and for Mäkelä it is easy to switch in a minute into a new task; this switch does not require an empty head for her. It seems, however, that this ability is a result of many years´ experience and the methods might also play a role as we will see in chapter 6.



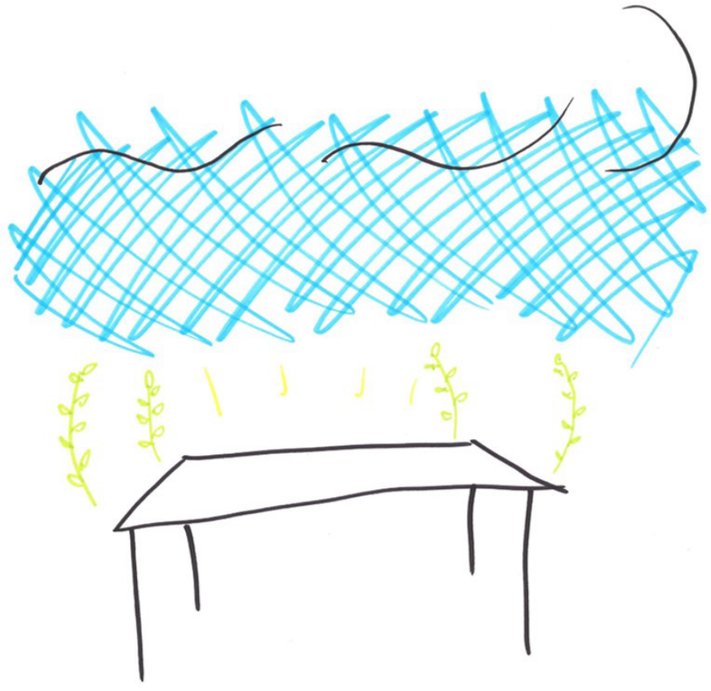
Picture 5.1.2 Creative space of student D (2019)

5.2 Welcomed pressure

Having appropriate amount of pressure at work is subjective and there seems to be a fine line between too much pressure leading to stress and too little pressure leading to idleness or laziness. Even though only two interviewees selected feeling “relaxed” as a prerequisite for the creativity of a young designer, nearly all underlined in the discussion that stress clearly reduces creativity. Interestingly, it was students selecting this feeling in prerequisite questionnaire and discussing it in detail, indicating that the younger generation might value relaxation higher and question the high pulsing corporate working style. An example of a non-stressful creative space is the drawing of student C (2019) in picture 5.2.1, where the plants have a calming effect, the yellow color reflects the wonderful emptiness and the waves describe the good feeling.

Having enough time and a comfortable pressure lifts creativity among young designers. Ideas do not just emerge when ordered. Miettinen (2019) summed this up: “The idea of setting up an ideation workshop for designers from 3 pm to 4.30 pm is dead at birth”. Enough time gives the feeling of freedom and creates headspace for creativity (student B 2019). Tight time limits may also reduce the creative output of those individuals, whose creativity is bound to the daily rhythm; for student F (2019) the most creative time of the day is a slot of two hours right in the morning.

Student D and B (2019) emphasized that you need to feel relaxed to be able to ideate from the blue sky; one could seem inefficient, but this might be The path to great ideas. All experienced interviewees were



Picture 5.2.1 Creative space of student C (2019)

of the opinion that extra pressure is not necessary and adequate amount of stress would be ideally inborn, positive stress. Unluckily, stress seems to have an infecting nature; student F (2019) described that a stressful crowd in a workshop influences your mood and creativity level immediately.

Energetic, rest feeling was brought up as a prerequisite for creative work by half of the interviewees, both students and experienced interviewees. Being creative is difficult when tired and this is in many cases related to the level of pressure and stress. It is also to be noticed that energized feeling has a direct link to having peace of mind; student A (2019) finds that if one is well rested, you have higher level of concentration, your thoughts are clear, and you can concentrate on creative work even if there are disturbances, such as noise.

5.3 Openness

The feeling of openness was selected as a prerequisite for young designer´s creativity by nine interviewees and it shares the place number one in the questionnaire. Openness was in the discussions connected with the feelings of alertness and curiosity. Alertness got altogether five votes and curiosity four votes in the questionnaire. Interestingly, all three attributes were valued higher among the experienced interviewees than among students. Students gave altogether seven votes and experienced ones eleven votes. Could it be that the students take a certain openness and alertness self-evident? All design students at Aalto seem openminded and conscious about future trends and threats. An example of openness in the creative work is the drawing of student B (2019) in picture 5.3.1, which describes the wide scale of ideas and feelings in the “wow moment”. Another example is the drawing of Miettinen (2019) in picture 5.3.2, where the night opens out to the space.

Openness was considered a prerequisite for finding something new. Openness is the ability to evaluate situations in a bigger context and as readiness to question the existing (Kolinen 2019). Miettinen (2019) stated in the same manner that young designer needs to be open and alert to understand the surrounding world and its psychological set-up. Students found it good to keep eyes open and let the outside influence flow in your mind. Mäkelä (2019) pointed out that being open-minded, new tasks will trigger your creativity automatically. She also pointed out that a good designer wants to understand issues thoroughly.

Interestingly, three students saw openness as an ability also to ignore other peoples´ fixed opinions and preferences and to allow yourself to think freely. It seems to matter a lot for young designers how they are judged by the outside world and they need to have courage to swim against the upstream, think critically and openly question the existing.

Alertness helps the young designer to see the next steps, opportunities and threats (Stenros 2019). A designer needs to be awake, look after things and look actively after inspiration and different options (student B 2019). According to student A (2019), alertness means also physical alertness; active seeing, hearing and doing. This is something that the young generation can easily do; it is now made so easy to explore the world not only through physical travelling, but also through sailing in the digital world.

Picture 5.3.1 Creative space of student B (2019)

Picture 5.3.2 Creative space of a young designer, E. Miettinen (2019)

5.4 Positivity

Positive feeling in this chapter relates to a wide range of feelings, such as excited, passionate and cheerful, and these are all relatively active feelings linked to each other. Adjectives passionate and excited got rather similar emphasis from the students and from the experienced interviewees in the prerequisite questionnaire. Interestingly, cheerful got all three votes only from students. Perhaps the positive feelings have more influence on young designer´s creativity than the experienced interviewees admit. However, the positive feelings came up in the open discussions and Stenros (2019) even lifted the sense of humor to the top attributes of creativity enhancers for young designers. The meaning of positive feelings is illustrated in the drawing of Karske (2019) in picture 5.4.1 and in the drawing of student E (2019) in picture 5.4.2, where the fireworks spread in all directions and you just can´t keep hold of yourself. Furthermore, student F (2019) describes the feelings in her drawing in picture 5.4.3 through a bean that may glow and jump around from excitement. From the experience of group work, during my studies, it is obvious that positive feelings have an influence on creativity and the results. Best results are created while having fun.

Creative work begins with enthusiasm and if a designer is not passionate about the work, she is just earning the daily living with it (Miettinen 2019). In the beginning of a new task, the feeling is overwhelming; you feel like the world conqueror and you just cannot stay still (student F 2019). Mäkelä (2019) is describing similarly, how the excitement arises and you want to know more; how the little idea pieces make you excited and you would like to start immediately. You get anxious and inspired, pulse beating harder, and you want to do just anything to contribute (Karske 2019).

Miettinen (2019) stated that ideal feelings for creative work includes joy and fun. According to him, a good designer can ideate new product concepts without joy when obliged, but the result is not the best possible. When you are cheerful you are also productive (student C 2019). Stenros (2019) even revealed having tested designer job candidates´ sense of humor in interviews; who would want to do creative work with colleagues not understanding humor?

Based on the interviews, three influencers on positivity can be seen. First, the meaning of the work. Second, the physical surrounding of the working place. And third, the people you work with. These three issues are opened shortly in the following.

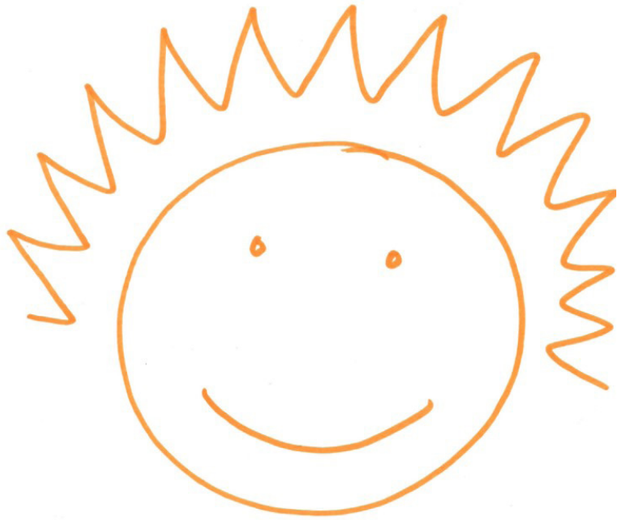
First, many students related positivity, passion and enthusiasm with the content of the task. Work needs to be meaningful and give the feeling of contribution on something important (student F 2019). Stenros (2019) underlined that a creative person cannot work without a meaning; she leaves the job if the creative space is not given. Student (2019) F is enjoying sharing of the joy through the creative outcome; the joy of making can be sensed from the product and this brings positive feelings to her and the user. Thus, the product seems to be a communication medium for her to deliver meanings. It can be stated that for young designers, meaning and contribution of the work is in core of positive feelings and motivation.

Secondly, nearly all interviewees took up surrounding proactively as a contributor to positive feelings. However, the students and the experienced interviewees regard surrounding differently. Student see it from the perspective of the creative task and as the creator of the creative work space. Experienced inter-

viewees, on the other hand, emphasized the overall flair and look. For example, Karske (2019) described how a traditional office is halting one´s creativity and environment should resemble yourself. According to him, designer needs a beautiful or stylish surrounding for the positive feelings and inspiration; Google and Facebook offices or Espresso house as an example. Students emphasized, how important it would be to surround yourself with inspirational visual material and have the possibility to leave projects lying around. Student E (2019) finds that a creative space shouldn't be a finished room, but merely a box, where you can do your own set up; for example, attach a kite to the ceiling. It is important to have a flexible working place, where one could lay down or make even a mess (Stenros 2019).

Third, a factor coming up in the discussions as an enhancer of positive feelings, were the human interaction issues. If the design project head is not seen in positive light, it affects the performance level (student A 2019). Also, you should surround yourself with persons, who inspire you (Karske 2019).

Even though classical negative feelings were mostly found counterproductive, the issue is certainly not black and white, like brought up in the literature review. Student D (2019) told that she is doing creative work sometimes when not feeling well, but the result is less important than the process itself. Student E (2019) on the other hand mentioned that being irritated can be a motivator; when you "have had enough and you want to show them". She also argued that it can be valuable to be bored, because you can just be and think. She pointed out how children are told being bored is valuable, because at such a moment you need to create your own play and the same analogy goes for adults; their creative work is like a joyful play.



Picture 5.4.1 Creative space of a young designer, J. Karske (2019)

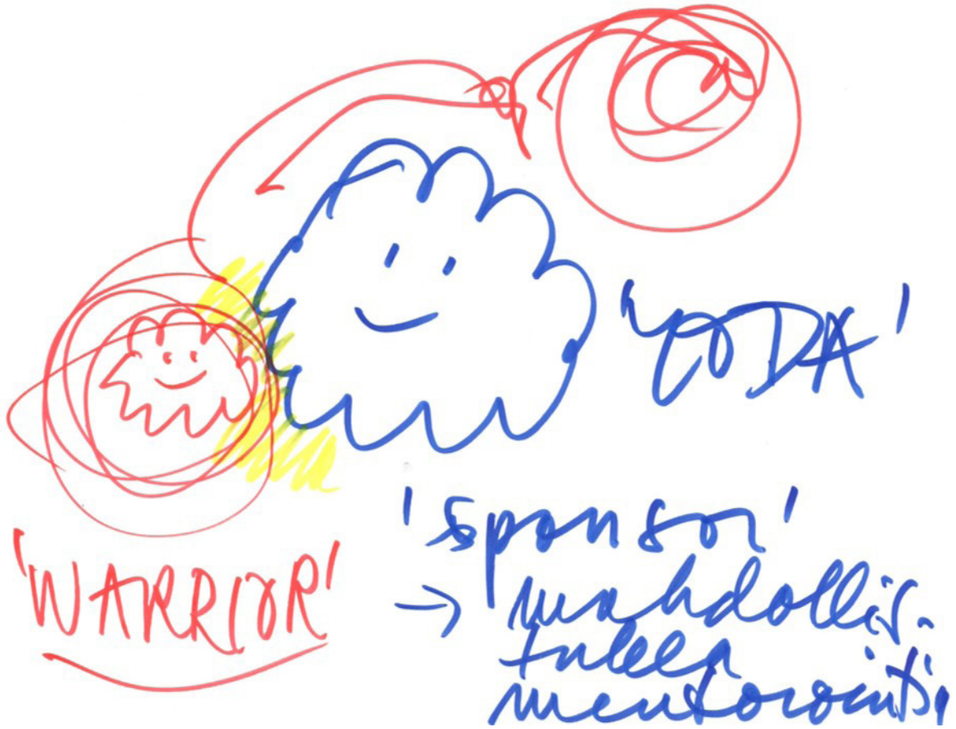
Picture 5.4.2 Creative space of student E (2019)

Picture 5.4.3 Creative space of student F (2019)

5.5 Trust

Trust, respect and appreciation were a subject area following like a red string throughout the interviews. It was emphasized as a major building brick for creativity by the experienced interviewees and brought up by the students. Trust was seen a valuable element in several directions in the organization and it has a connection with the open atmosphere at a working place. If there is only little trust, the follow-up of the tasks is tighter, even authoritarian. On the other hand, with a lot of trust, the designers can work more freely and determine the boundaries of work. In the discussions, even very basic needs related to trust, such as feeling physically safe or vulnerable, came up. They seem not to be as self-evident as one could think.

For young designers feeling trusted and appreciated are key issues; this way they have courage to share their fresh opinions and ideas. Non-criticism is valuable and gives space. (Kolinen 2019) Miettinen (2019) also stated that if you are showing the young designer trust, she seldom fails; and it should be okay to approach the superiors with questions. Students found it okay to have differing opinions; criticism is fine, if it is fair, constructive and you learn from it. Like T. and D. Kelley put it (2013, p. 10): “When people transcend the fears that block their creativity, all sorts of new possibilities emerge. Instead of being paralyzed by the prospect of failure, they see every experience as an opportunity they can learn from.”



Picture 5.5.1 Creative space of a young designer, A. Stenros (2019)

Student B (2019) finds that if management is too authoritarian or you feel anxious, you do not have courage to try new things and you opt safe, practical solutions that make immediately sense; you cannot suggest something wild and creative. She added that there needs to be enough freedom with some boundaries. Mäkelä (2019) would have enjoyed as a young designer of being thrown to cold water. She pointed out that it is the management´s responsibility to evaluate how each individual designer should be supported. Patronaging was found unpleasant by the interviewed students and, there is a fine line between patronaging and support. This situation is illustrated in the drawing of Stenros (2019) in picture 5.5.1 that presents Yoda mentoring a Warrior. Without a mentor, young designer will go in circle around herself and cannot reach the next level, she stated. Her own creative space, on the other hand, consists of completely different elements (picture 5.5.2), which are not related to trust.

According to Stenros (2019), feelings of vulnerability, disrespect and laughing at others affect negatively the creativity of young designers. You need to feel yourself safe and accepted in order to do creative work (student A 2019). Student A relates acceptance both to person and her work. Any unfair treatment, or not becoming listened to or respected, would result in the loss of trust and loss of creativity.

Picture 5.5.2 Creative space of A. Stenros (2019)

5.6 Self-confidence

Self-confidence was worrying many of the students and at the same time it was regarded crucial for creativity. It got three votes from the students in the prerequisite questionnaire and one vote from an experienced interviewee. A few experienced interviewees took it up as a bigger issue in discussion. The role of self-confidence for creativity can be seen in the drawing of Mäkelä (2019) in picture 5.6.1, where, for her, one can see a wide transparent circle, peace for concentration, steadiness and confidence. On the other hand, for young designer (5.6.2) one can see a tighter and darker undeveloped circle with unconcentrated disturbances and gaps.

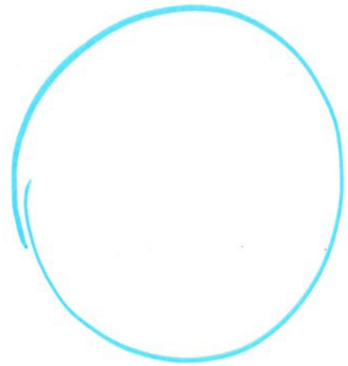
It seems that the feeling of trust (discussed previously) gives a designer a permission from outside to be creative. On the other hand, the feeling of self-confidence gives a designer this permission from inside. Thus, they might be two sides of the same coin. Feeling fearless is linked to self-confidence and discussed also in this chapter; fearless got one vote in the prerequisites questionnaire.

Student A sees that self-confidence of a designer is based on managing the techniques, tools and methods: “it´s easy to start working without barriers when you manage your tools”. Self-confidence is the feeling that you know you can do it (student D 2019). Self-confidence gives you courage to try out new things, so that you can develop (student A 2019).

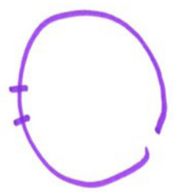
One might also lose the positive mood at the start if you know that your own competences and the task do not fit together (student C 2019), a classical situation described in the flow theory. Despite of this, one has to believe in himself and try her best (student C 2019). Similarly, Mäkelä (2019) finds that the young designer needs to believe and trust in herself as this enables her to “do it again” even after disappointments. She has noticed that when the belief in own capabilities has staggered, designer might not concentrate and listen to what the actual problem is and not give possibility for new ideas. She suggests that young designers abandon worrying about own skills and stop thinking “I cannot”. One could make the conclusion that it could be possible to modify, or cheat, the theory of flow through autosuggestion by changing the x-axes to “preserved skills” instead of “objective skills”.

Miettinen (2019) on the other hand, finds that the actions of the superior have direct influence on the young designer´s self-confidence: “If the superior is constantly monitoring and governing behind the shoulders, the young designer gets uncertain and hesitant.” Important note from Mäkelä (2019) was that “You need to know what is good enough”, because a low self-esteem might easily lead to stress and uncontrollable workload.

Self-confidence has also a connection to knowing yourself. You need to be honest to yourself and consider, what are your strengths and weaknesses; it is not meaningful to cover them up (Mäkinen 2019). When you feel authentic, confident and have your own vision; you don’t need to be afraid of the reactions of others and you can be fearless (student E 2019).



Picture 5.6.1 Creative space of M. Mäkelä (2019)



Picture 5.6.2 Creative space of a young designer, M. Mäkelä (2019)

5.7 Sense of community

The last group of feelings, feeling sense of community, sneaked into the list through the backdoor. It came up only in few interviews, but the meaning of sense of community is getting foothold in the young generation and it will be interesting to see how the meaning of it will evolve among young designers. Like stated in the literature review, it is generally known that cooperation and group work accelerate the creative processes. Thus, feeling sense of community is a promising goal for any multi-person environment targeting at enhancing creativity. Two perspectives should be acknowledged, sense of community in private life and, on the other hand, sense of community at work.

Sense of community in private life was found essential particularly for young designers. By following media and the behavior of other students and my own children, it can be seen taking new forms, like internet and gaming communities and it shows up as a generational issue. This is demonstrated in the drawings of Kolinen (2019). In his own space 5.7.1. you can see far away, you have all the space and air around and a relaxed good feeling. The young designer´s space (5.7.2) illustrates urbanity, doing together and social and communal thinking is in the spotlight.

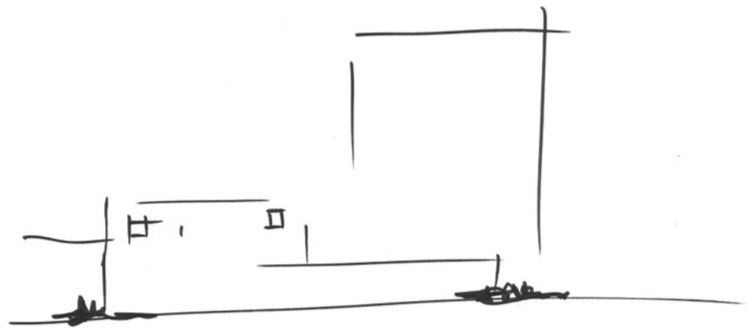
Student E (2019) emphasizes the importance of the sense of community and in the same context, how it should be accepted that all of us are creative and we shouldn´t make a buzz out of it. For further research it would be interesting to know through which intermediaries the sense of community affects the creativity: is it the feeling of having any community? Or is it rather the inspirational subject area or people and the values, around which the community has been formed?

Picture 5.7.1 Creative space of P. Kolinen (2019)

Then, if we look at sense of community at working environment, it seems as if the young designers have challenges. Mäkelä (2019) points out that in an environment where you need to work in teams, you need to be able to express yourself in “we”-form. She has noticed that young designers often use the “I” and “Me” -phrases. Young designers have the need to emphasize their own contribution and themselves and this problematic should be acknowledged and influenced earlier, at latest at the University level (Mäkelä 2019). It is true that it is difficult to imagine creativity flourishing in an environment full of individualists keeping their good ideas for themselves. This conflict is evident when observing the team work in design courses.

The individualistic past of Finnish design history might make communal thinking hard for young designers. According to Mäkelä (2019), young designers have difficulties in differentiating themselves and they see two options: either you are trying to make a brand out of yourself or you are playing as a part of the team. Creative people are never loyal to a working society, but only to themselves. Low hierarchy in an organization is important and you need to have the feeling of shared problem solving to achieve a creative atmosphere. (Stenros 2019)

Thus, we are dealing with a problematic area. Young designers´ creativity might benefit enormously from absorbing and driving the sense of community at work, but how to transform individualistic designers into team-players and into an integral part of working community? Some issues that make this shift harder are personality issues and the reluctance to make compromises in content. Generally, students do value cooperation and comprehensive support. Therefore, the shift shouldn’t be too difficult to reach. Furthermore, the feeling of sense of community depends on the organization and management. For example, Karske (2019) explained, how he once started as a design team lead and changed the working spaces to open office. This changed the working culture towards openness at the same time lowering the hierarchy.



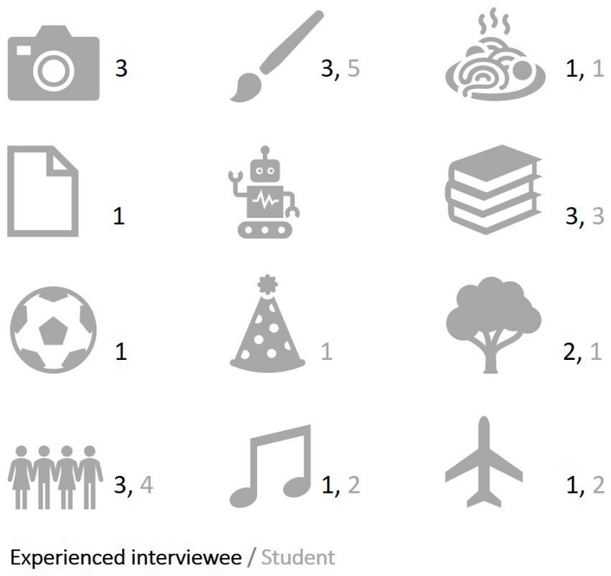
Picture 5.7.2 Creative space of a young designer, P. Kolinen (2019)

6. Creativity methods and techniques

The second part of the thesis concentrates on the variety of methods and techniques used in idea generation and in enhancing creativity. The aim was to identify methods and techniques that would support young designer´s creativity. The discussion is divided into four categories, which are, with modifications, based on the creativity process model of Wallas (1926, ref. T. Takala 1992, p. 92) as discussed in chapter 4.3. The discussion here is supported by the results of the icon selection task (picture 6.1), where interviewees were asked to select three icons for enhancing young designer´s creativity. Based on the interviews, the icons were allocated into the categories in the following way (picture 6.2):

- Preparation: *information gathering* (book, camera, airplane)
- Incubation: *setting up optimal mood* (meal, tree, party hat, music, football, piece of paper)
- Verification: *working on object* (brush)
- Additional category: *human interaction* (group of people)

Ten of eleven interviewees chose the three icons from three different categories, thus selecting only one icon from each category. Interviewees were not aware of the categories and the icons were mixed. Chosen combinations were most often based on human interaction, working on object and setting up the right mood or human interaction, working on object and information gathering.

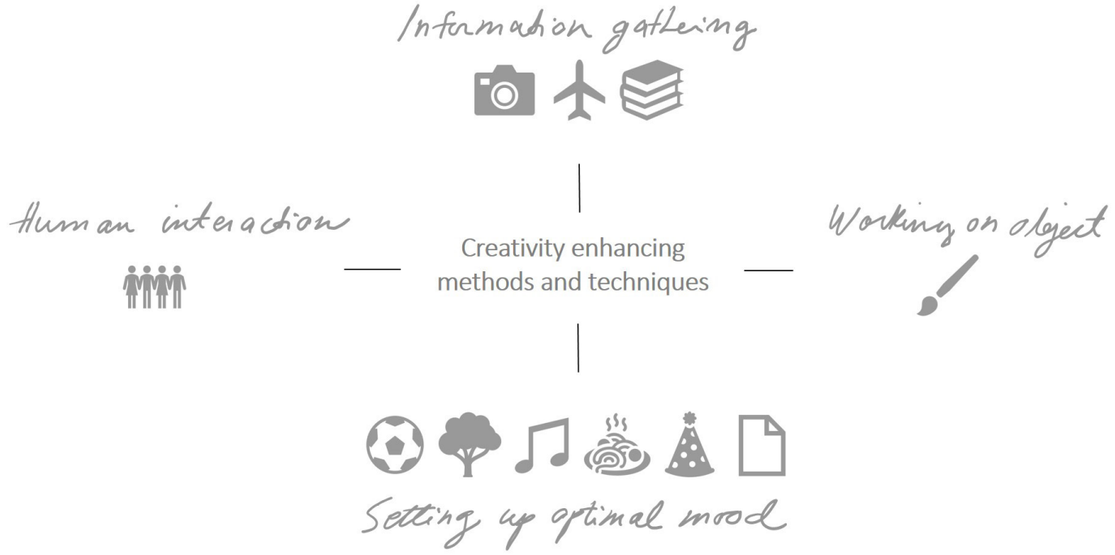


Picture 6.1 Selection of icons that enhance the creativity of young designers, number of votes

There exists a wide variety of techniques and methods in all categories. This thesis concentrates on those methods, techniques and tools brought up by the interviewees. In addition, interviewees were asked to comment the following commonly known techniques (definitions of M. Tomitsch 2018, p. 104, 92):

- Reframing: A way of learning to look at a problem from a different perspective in order to unlock a broader range of solutions.
- Brainstorming: Method for generating ideas to solve a design problem in a group through broadening the solution space (A. Osborn 2019).
- Mood board: Visually represents design ideas, concepts and values in an open-ended and evocative way. Outcome comprises images and other visual elements.
- User journey mapping: A way of presenting and describing every important step and infrastructure of an experience in single view (user´s doing, thinking and feeling).
- Co-design workshop: Brings user, customers, stakeholders and designers together to rapidly critique and iterate on design concepts.
- Doing mockups: Scale or full-size models of products and their features. They visualize the products early on in design process.
- Video prototyping: Useful method in to communicate an idea before building functional prototypes through a short movie showing user interaction.

Young designers should acknowledge the good and bad sides of different tools; they should be able to combine these and handle the basic tools well. But, if you think that you can design, when you manage tools, you are on side tracks (Kolinen 2019).



Picture 6.2 Categories for the analysis of creativity methods and techniques

6.1 Information gathering

Ten of eleven interviewees selected icon representing information gathering (camera, book or airplane) as an enhancer for young designer´s creativity. In this chapter, those techniques and methods are presented that enhance creativity in information gathering.

6.1.1 Ways to approach information gathering

Information gathering icons were selected because of two perspectives; searching for information and inspiration through live surrounding and secondly, through preorganized and processed information, like books and internet.

Camera represents observing, insights and access to Pinterest, Instagram, photos and screenshots that can be used as a basis for mood board and benchmarking (Karske 2019). Some selected camera for scanning the environment (Stenros 2019) and observations (Mäkelä 2019).

Book was selected for human skills and human knowledge (Stenros, Miettinen 2019). For Kolinen (2019) book means searching for inspiration through a variety of channels, like podcasts. Students connected books with research, internet, physical books and interviews (student D 2019) or knowledge and the surrounding world (student B 2019). For student A (2019) they mean not only reading, but also all outside influence, getting new ideas and, consuming the object under process.

Airplane, thus travelling, on the other hand enhances the skills of the young designer to empathize (Mäkelä 2019). Airplane was found to be interesting due to inspiring transitions, when something is left behind and new will come (student E 2019). By observing people from different cultures, you start to understand their motivations, aspirations and perhaps even hidden desires. Travelling and different cultures are a major source of inspiration for student C (2019).

6.1.2 Creativity methods and techniques- information gathering

The most important methods and techniques to go around with information are, based on interviews, benchmarking as well as finding, collecting and documenting sources of inspiration in different ways, creating mood boards and reframing in mind. User journey mapping was found useful, but used more selectively, for instance by stepping in user´s shoes (testing). All these techniques are used overlappingly in multiple combinations.

It is crucial to find benchmarks for inspiration and the more you have experience, the more benchmarks you have (Karske 2019). Students wants to know what has been done already and what is possible even though the information might be depressing; everything has already been done somewhere (student D 2019). You can search for inspiration by reading books and magazines and spending time in a social meeting place, like coffee shop (Karske 2019).

It is useful to collect visual material for inspiration: information, voices, atmospheres, people, opinions; also aside the actual topic (student F 2019). Student F is giving an example of this; if the task is about

carrots, she might select a variety of orange objects as inspirations. This resembles lateral thinking concept that was discussed in literature review.

In addition to visual material, students are collecting written ideas. For instance, student E (2019) writes the ideas immediately down on phone, when they come. The first thought is valuable as it is very often clear as crystal; a few words are not enough to gasp it for later use. She is in other words describing the illumination moment discussed in the literature review. Student C (2019), on the other hand, writes down ideas in order to reframe the problem.

For student A (2019) the most important ideation technique is the consumption of media. She consumes material related to her work and sets herself on the place of the consumer. Thus, steps in the shoes of the user. After consuming she starts to collect information and narrows down the options step by step: “First you ask yourself, what kind of castles to design? Then you ask, what kind of medieval castles? After this you may ask, what kind of German medieval castles? And finally, what kind of courtyards of German medieval castles?”

Student D (2019) is building mood boards based on own sketches and benchmarking. For student A (2019) mood board build up takes place between consuming media and finding information. The mood boards live in the process, spread in various directions and get more and more detailed. The width of the mood boards has narrowed down as a result of managing the process better. Student E (2019) on the other hand finds collecting a research book a useful technique. Furthermore, visual idea creation can be facilitated for example in a workshop, where the participants first paint and then collect visual samples to form collages. (student F 2019).

Reframing and user journey mapping seem to be natural ways of thinking for most of the interviewees and are being processed unconsciously or in mind without physical facilitation. Reframing works well together with visualization in mind and is a good basis for ideation (Karske 2019). Miettinen (2019) finds reframing essential; you need to consider first if you are targeting the right issue. Some experienced interviewees suggested that young designers might not understand reframing as they tend to fall in love with their first idea. However, from the perspective of students, reframing was found a useful tool which should be used more often.

Customer journey mapping divides the opinions. If one does not know the customer, the likelihood of success is vanishing small, points out Miettinen (2019). On the other hand, Kolinen (2019) thinks that customer journey mapping is not an envisioning technique for the future, but maps just the present and therefore does not enhance creativity. Student A (2019) describes how she is doing user journey mapping in her mind all the time in game design: “what is the user doing next?” Student E (2019), on the other hand, sees that user journey mapping is just a way of thinking.

6.2 Setting up optimal mood

Nine of eleven interviewees selected icon representing setting up optimal mood (meal, football, party hat, tree, music and piece of paper) as an enhancer of young designer´s creativity. In this chapter, those techniques and methods are presented that enhance setting up optimal mood for creativity.

6.2.1 Ways to approach setting up optimal mood

Experienced interviewees saw many ways to set up optimal mood for creative work. Music was selected to create atmosphere (Karske 2019), a sheet of paper was chosen for writing poems (Stenros 2019), a football was chosen to express joy (Miettinen 2019) and a tree and music were selected for enhancing the skills to empathize (Mäkinen 2019). Finally, the meal was chosen to represent just being together and feeling good (Kolinen 2019).

Students had similar thinking patterns. Student D (2019) chose meal, because breaks are important, both alone and, for example, in a working team. Student A (2019) selected music, because she is always setting the mood and atmosphere through music. It helps her to get in the flow and to the illustrated space. Student C (2019) finds it helpful to go out for a walk. She gets inspiration from nature and forests, so she chose the tree.

Student F (2019) picked up the hat and music for relaxing, dancing, hanging around, having fun and for a relaxed feeling. She tells how sometimes she thinks that “this will not become anything”, lets it go and relaxes, and then suddenly, the good idea is there. This moment can be seen as an illumination moment as a result of incubation as discussed in the literature review.

6.2.2 Creativity methods and techniques- setting up optimal mood

Based on the interviews, two types of methods came out that should be taken into a closer analysis regarding setting up optimal mood, or incubation. First, using leisure time activities in combination and second, autosuggestion.

It came out that instead of using one of the abovementioned leisure time activities as mood techniques randomly, it could be possible to set up a creative mood proactively with some planning. Through combining the use of different techniques that enhance the right mood, a young designer could find a customized combination that works for her. For example, student F (2019) is arranging creative sessions for herself at home. To this creative session she is including music, a lot of coffee, jumping on home trampoline or going for a jog.

Secondly, Mäkelä (2019) brought up autosuggestion as a technique to manage the mood. “Autosuggestion is a psychological technique related to the placebo effect, developed by apothecary Émile Coué at the beginning of the 20th century. It is a form of self-induced suggestion in which individuals guide their own thoughts, feelings, or behavior. The technique is often used in self-hypnosis.” (Wikipedia, 2019)

When Mäkelä is unsure of herself or feels stressed out, autosuggestion helps her. This is a technique that could be used routinely to overcome disappointments. Mäkelä describes, how irritating issues can be swiped away from your mind to free it up for new creativity requiring tasks. This technique could be very useful for young designers facing up and downs in the career paths. Autosuggestion resembles NLP (Neuro Linguistic Programming) in visualization (see next chapter).

6.3 Working on object

Ten of eleven interviewees selected icon representing working on object, the brush, as an enhancer for young designer´s creativity. In this chapter, those techniques and methods are presented that enhance creativity while working on the object under development.

6.3.1 Ways to approach working on object

The reasons for selecting the brush icon were either very concrete or in few cases mental or conceptual. For instance, for Stenros (2019) it stands for physical drawing by hand and using tools. For Karske (2019) the brush represents the mental visualization process he is doing in his mind through NLP (Neuro Linguistic Programming). Mäkelä (2019), on the other hand, sees brush as one´s work, learning through doing and the signature one leaves in own work. Student F (2019), among other students, selected brush as it is obviously needed when things are getting concrete and you want to start doing design by hand. Also, for student A (2019) brush stands for concrete tools, which are for her the utmost important matter in enhancing creativity. Brush was also seen to represent limiting the working tools and resources to the essential ones.

6.3.2 Creativity methods and techniques – working on object

Methods and techniques related to the work on object are mostly very concrete and traditional, like drawing and doing mockups. Interesting exceptions from this were Neuro Linguistic Programming (NLP) and the discussions on computer-based techniques. Video prototyping was not found a useful or purposeful method.

Visualizing is a trendy subject and used in many untraditional domains. Karske (2019) visualizes concepts first in his mind in the deepest detail whilst utilizing the NLP method and achieves flow this way. The creative projects are constantly in his thoughts; day and night. He is highly recommending NLP visualizing method for young designers.

NLP is a holistic method and covers much more than visualization; it is used widely from top management to athletes and wellbeing. “Neuro linguistic programming is defined in the Oxford English Dictionary as ´a model of inter-personal communication chiefly concerned with the relationship between successful pattern of behavior and the subjective experiences underlying them.´ I would call it the modelling of success.” (P. Parkes, 2011, p.3)

Similarly, for Mäkelä (2019) ideation happens mostly in the whiteboard of her mind; she produces ideas in her mind by building up and telling the story. Students are also visualizing to some extend in mind before drawing, writing or modelling. However, student C (2019) finds it difficult to realize concepts after too long thinking and it is also difficult to let go after thorough thinking.

Physical tools are important for conducting any creative work (Stenros 2019). Stenros finds drawing important for a young designer´s creativity; through visualization it is possible to tell a lot in one picture. Miettinen (2019) starts immediately to draw when a design task is given, and a strong image of the solution is created within a short time. The intuition you get before starting the sketching is of utmost importance

and you need to have confidence to trust it, he stated. Miettinen suggests working diary for iterations and coming back to the initial idea. He defines intuition as a transient, irrelated event that needs to be seized and understood, thereby referring to intimidation mentioned in the literature review. By sketching you can realize your intuition, get proof on the superiority of the idea and get familiar with the product: “Drawing is means of searching the form and a way to conduct profound design work nearly to the finishing line. It is a cheap and quick tool.” In one of his case examples, he sent the young designers from pure 3D modelling back to sketching.

Student E (2019) draws a lot by hand and for her it is highly intuitive work. She is looking after the vision “like throwing a tennis ball to the wall and the ball bounces back always in different angles”. She draws dynamically, not too exact; 100 sketches are being produced in an hour. She is not sketching directly in 3D program, because she thinks the software forces you to make choices and has no aesthetics on its own; you need to do the decisions first to avoid making lazy decisions in 3D modelling. Stenros (2019) also points out that computer-based drawing is not transmitting enough content or shades. She finds that drawing by hand is giving a human touch, which is not replaceable through computers.

An interesting opposite view on ideation was given by student A (2019). Her primary method of ideation is to draw and paint in a 2D program. She sees that her ideal ideation methods are related to skills and self-confidence. Thus, if you would believe you were good in 3D modelling, you could do the creative work directly in a 3D program, she summarizes. It seems that you need to do the creative work with those tools and techniques you believe that you master the best. The 2D and 3D programs offer great possibilities for creative work, but if one does not master these tools, they are not useful for creativity.

Some students were using a versatile variety of techniques. Student D (2019) is ideating through writing, thinking, drawing and physical modelling and the idea might change even drastically when doing physical mockups or models, like with ceramics. At Aalto she has learned to apply successfully a method of three concepts and ten sketches.

Student B (2019) likes to ideate mainly through physical 3D mockups that illustrate the idea, but do not bind to specific solutions or details. She uses cheap tools like playdough, paper, plywood, cardboard and metal string for this purpose. She also uses Post Its, if she is designing sequences or user Interfaces on her own.

6.3.3 White paper horror

The worst creativity technique that student F (2019) has come across is getting a sheet of white paper, where you need to start sketching. She points out that it is necessary to hear or feel with your senses first; emptiness is anguishing. Even a prevailing enthusiasm or a dot on the paper might help her to start, she remarks. Student A (2019) also stated that the worst technique ever is “just paint something on the paper” or “just write something on the paper”. She summarizes that the technique is good only for persons who do not know what they are doing. For student D (2019) the worst technique she has had to implement was to draw altogether 30 sketches.

6.4 Human interaction

Eight of eleven interviewees selected icon representing human interaction, group of people, as an enhancer for young designer´s creativity. In this chapter, those techniques and methods are presented that enhance creativity regarding human interaction.

6.4.1 Ways to approach human interaction

The reasons for selecting human interaction as an enhancer of creativity for young designers were various ranging from daily social interaction to finding out others´ opinions on own work, cooperation and to the very meaning of humanity in design. None of the interviewees brought up the importance of official group work.

Mäkelä´s (2019) reasoning for the selection was cooperation, learning from others and teaching others, whereas Kolinen (2019) refers to the sense of community and internationality. According to Stenros (2019), creating human skills is more important than any other methods, because human insight, problem solving capabilities, emotional and social skills, are irreplaceable also at times of artificial intelligence (AI).

For student F (2019) human interaction represents persons, not necessarily colleagues, with whom to reflect and from whom to get feedback to lift-up the concept on the next level. For student B (2019) human is the starting point for all work and the human interaction represents exchange with people struggling with the same task or just a general social interaction with other people. Student E (2019) on the other hand, connects the group of people with a break, coffee and chatting; with silence and space. Student D (2019) has learned that just talking around about own projects is a handy reflection tool.

6.4.2 Creativity methods and techniques- human interaction

It can be generalized that first, socializing and being in casual contact with other people is seen as a valuable technique for creativity. Secondly, it is useful to talk about current design projects with friends. Thirdly, the interaction taking place within a real project group or in co-design setting is a bit more demanding for the students, nevertheless, heterogeneous groups are seen valuable for idea exchange. All variations, however, seem to lift creativity and, interestingly, students seem to consider wide range of interactions as unfacilitated and unorganized brainstorming.

Group work is a creativity enhancing method that is found useful, but success depends on group members. It was generally seen valuable if group members are from cross-scientific backgrounds as this widens the bubble (student B 2019). Student C (2019) made an obvious but an incisive notion that four times her would not form an optimal group. A group of designers discussing taste issues is exhausting and compromising, but it is good to explain ideas to the others, as it is clarifying the topic also to yourself (student D 2019). There needs to be a common verbal and visual language in a group (student B 2019). Some students had found group work challenging due to feelings of uncertainty, anxieties, fast pace and difficulties to communicate one´s thoughts.

Experienced interviewees described that group ideation normally takes place through several methods. Kolinen (2019) pointed out that in all ideation, management involvement is essential as envisioning the future is important; you need to understand the big picture, industry, megatrends and strategy first. Then you can start free ideation. Co-design workshops were not that familiar for the students, but experienced interviewees had been using them to varying degree. Kolinen (2019) sees co-design workshops useful, but, at the end, it should be a small group of people making any decisions; otherwise the result is a big compromise.

Brainstorming was found a good basic creativity technique. It seems to take place spontaneously. Brainstorming is a quick method that can be done between and parallel to other tasks (Mäkelä 2019). Mäkelä does this mostly with a wall, where everyone can attach Post Its of ideas, words, visualizations and reifications of the problem. Student E (2019) told that brainstorming takes place for him dynamically in interaction with those people with whom she shares her thoughts. Brainstorming was seen among the students also as an individual creativity technique.

Mäkelä (2019) and Kolinen (2019) brought up a fresh idea generation technique (from now on referred to as *rotating solution cards*), where, after framing the problem, a group of four takes five blank paper sheets and places one sheet in the middle of the group on a table or on a floor. Each group member takes one sheet of paper and starts to write solution ideas on it. Everyone switches her paper sheet regularly, in own pace, against the paper sheet in the middle, so that all paper sheets get rotated. The ideas written down on the paper sheet are always feeding the creative thinking processes of the next persons. The most obvious ideas are processed first, but then thoughts start to evolve, refine and get complex. This method seems promising for young designers as it is easy to implement in any setting, without extensive guidance and it would be suitable for all kinds of persons from introvert to extrovert, because it encourages also shy and unsure members express themselves in their own speed without immediate feedback.

Other methods, techniques or ideas that were introduced in the interviews were:

- Ocean eleven attitude: an open pool of persons with different backgrounds and varying skills to choose for problem solving projects within a company (Stenros 2019).
- Unconference: discussion group established for a certain subject area - the participants have an equal standing in a circle with a facilitator, who is not influencing the content and lets the participants drive the meeting (Stenros 2019).
- Shared Sense Making: participants read about trends to determine the possible directions together (Stenros 2019).
- Fake advertisement: group is envisioning together how company advertisement could look like in 5 years. The idea is to exaggerate and go over the boundaries. (Kolinen 2019)
- Co-Creation Cards (Silje Kamille Friis): group picks up prewritten ideation tool cards for further ideation (student F 2019).

6.4.3 Lost in Post It ocean

The worst ideation methods of the interviewees were related to Post Its, google design jam as an example (Stenros 2019). Many find that service design field consists of invaluable and aversive Post It techniques, which are not fancied by experienced designers. Kolinen (2019) thinks that often the goal disappears somewhere between the Post Its. He states that the goal needs to be clear when using the Post Its, and management needs to pick the pearls out of the Post It ocean.

Student C (2019) describes how the worst ideation technique she has come across with was a Post It ideation session. Student D (2019) has not yet assimilated the techniques of service design but believes that they could be valuable, and it is just laziness if you cannot process a Post It ocean; student B (2019) finds Post Its practical in brainstorming. But for many, Post Its represent corporation working style and branded thinking techniques (student E 2019) and, even though they could be useful, they reject the use of them. Criticism given to Post Its is worth noticing, as prejudices alone can have a negative effect on creativity. It would be worthwhile to consider the reasons behind the Post It criticism; perhaps it is unnecessary and could be overcome.

7. Conclusions

Feelings, emotions and moods that influence creativity in design are not a widely researched area and the creativity enhancing environments have been mostly studied in organizational settings and management discipline. Interviews and literature review show that the feelings present before and during the design task influence young designers´ creativity. Complexity and deepness of those feelings that play a role in creativity were a surprise. Some of the feelings are strongly inborne and some dependable on management and company culture. All these feelings can be, however, influenced by both designer´s own capabilities and attitudes and the surrounding environment.

Some experienced interviewees can consciously influence their feelings through autosuggestion. The rest of the experienced interviewees are likely to do this unconsciously. Negative feelings are found suitable for processing own feelings through design, but the creativity and value of the result remains unknown.

This thesis identified seven groups of feelings that enhance the creativity of young designers: *peace of mind, welcomed pressure, openness, positivity, trust, self-confidence* and *sense of community*.

Openness is a necessity for digging deeper in a thematic manner, finding new inspirations and thinking critically. *Positivity*, such as feeling excited, works on the other hand as a great motivator for the creative thinking, especially if one can deliver true meanings and be surrounded with inspirational working environment and community. However, instead of just emphasizing openness and positivity in enhancing creativity, there is a need to consider feelings that might be taken for granted but are not self-evident. These are the feelings of *trust* and *self-confidence*. All idea sharing lies on these two feelings and they also depend on each other. If there is no mutual trust and fair judgement, it requires high self-confidence to express your ideas. Furthermore, if young designer is not trusted, her self-confidence is not getting stronger; basic human needs and human interaction needs to be payed attention to. In addition, young designer´s self-confidence depends on how well the creativity methods and techniques are managed, including autosuggestion.

Fast pace and multitasking of todays´ working environment is a challenging equation for young designers. *Feeling peace of mind* and *welcomed pressure* both set requirements on the management styles and company cultures. Ideally, young designers are given both mentally and physically peace of work and their tasks are scheduled in a realistic manner giving space for creativity. Above all, management needs to set clear goals and boundaries for the tasks, allow single tasking and support concentration. Again, a way to help young designers to cope better with multitasking and stressful time tables, is to train them well in creativity techniques and methods, so that they are an integrated part of the design routine.

Last, *sense of community* is an interesting area that will certainly evolve in the coming years as younger generations start to modify the design field. It will be interesting to see, if the individualistic type of designing will eventually give room for communal thinking and what kind of a role different types of communities take in design; and if design can be made in “we form”.

The creativity methods and techniques are a widely researched area, where one gets lost between hundreds of methods and their variations. The methods and techniques used in practice are surprisingly traditional. Only in rare cases techniques were taken literally from a workbook into the use. Instead, they seem to be individual adaptations of commonly known creativity enhancing methods and techniques. Many of the techniques and methods are used for processing in mind, consciously or unconsciously. If the whole picture could be seen, they would probably show out comprehensive. It is seldom that inspirations and ideas come from the blue sky without any effort; you need to take concrete steps and start processing the task. Active use of creativity methods and techniques are valuable for young designers in opening up the creative thinking process. Generally, good management of variety of the basic techniques, seems utmost important for young designers. In addition, one should not get constrained only to the familiar methods, even though they had turned out valuable. Instead, one should consciously get exposed to different methods and approaches.

Some of the methods and techniques were not seen as creativity enhancers, but as a part of a corporate approach and useful mainly in presenting and selling ideas. This was the case especially with Post It and service design methods and techniques.

In this thesis creativity methods and techniques were discussed in four categories, which reflect the situational needs: *information gathering, setting up optimal mood, working on object and human interaction*. Methods that work best depend, in addition to the situation, on personality and the assignment. It is valuable to try out and get experience of different types of methods and techniques in order to collect a customized creativity tool kit. Different methods and techniques could work in interaction, in a cycle or even parallel.

For *information gathering,* the young designers are suggested to find innovative approaches in collecting visual and other material; possibilities of searching inspiration are vast. It seems also that traditional benchmarking and making mood boards work well. Collected material is good to organize in such a way that it can be found and presented easily when needed. Reframing is good to do intentionally and not just in mind, at least until it becomes a real routine. Lateral thinking methods and reframing of the problem are characteristic for the experienced interviewees; young designers are still practicing these and a major obstacle might be in the self-confidence and trust required to openly express ideas and trust intuition.

S*etting up the optimal mood* is a wild west considering creativity methods and techniques. It is recommended that young designers build up their own combination of leisure time activities for setting up optimal mood, one that suits their personal preferences. For some it is perhaps music, party and video games and for someone else it is sports and coffee shop. Another method worth considering is autosuggestion that can be a valuable technique for young designers struggling with fluctuating feelings and difficulties in managing mood after disappointments. This is also a valuable method in a multitasking working context with tight schedules.

Working on object category offers ideation techniques and methods that are mostly traditional with a wide variety. These basic techniques are valued very high. Visualization in mind is also a key technique and

the NLP method may offer an interesting methodological base for it. 2D and 3D visualizing software divide the opinions. It is likely that if one does not manage these tools well enough, it is hard to be confident with them, and, therefore, it is not possible to relax and let space for creativity. It is highly recommended that young designers try out computer-based techniques for creative work as they may offer surprising perspectives on it.

Human interaction category is a powerful ideation category and it covers many interesting group ideation techniques for young designers, such as the rotating solution cards and the fake advertisement technique that can be easily adopted by young designers without any facilitation and can bring valuable change for the traditional group work and brainstorming. Highly recommendable for a young designer is also to start practicing informal brainstorming with friends in a coffee shop setting.

An interesting note is that none of the interviewees chose the robot icon to support the creativity of young designers. It seems that technology and artificial intelligence are not seen as an opportunity for creativity, but as a threat. I would recommend the young designers keep artificial intelligence on eye as it may offer surprising opportunities in all discussed categories. It may even radically change these categories so that you may replace human interaction with virtual reality friends, replace information gathering with information generating based on certain algorithm, and you may let the AI based 3D software suggest you design variations; or you could ask tips for your mood problems from your digital advisor.

At the end, we see that the creativity enhancing feelings and creativity methods and techniques are linked to each other. The better young designer manages the methods, the better she copes in a demanding multitasking environment and under pressure; resulting in higher self-confidence, relaxation and creativity. Creativity enhancing feelings, on the other hand, support the successful application of the methods and techniques; you need peace for concentration, a moment without too much stress, open attitude, positive drive and interaction with others to come up with the greatest ideas.

It is possible to utilize these results in companies and educational institutions in order to get the whole creativity potential of young designers into practice. Based on the results, creativity of a young designer is not dependable on the industry or on the degree of artistic approach used in the industry. Instead, it seems possible to build up an organization that is supporting young designer´s creativity in any field, if the young designer is just given the possibility to deliver meanings that are in line with one´s values.

The scope of the thesis was relatively wide and, even though the conducted research was successful, it requires a more in-depth analysis in the different focus areas to validate some of the results and to gain an even deeper understanding in the areas of different feelings and methods. This future search should be beneficial for the whole design industry.

8. Discussion: companies and educational institutions

The results of this thesis can be applied in management practices in companies and in educational institutions. Both areas, feelings as well as methods and techniques, can be strongly influenced from outside.

Keeping up an atmosphere of trust and respect is essential to facilitate open expression of ideas. By keeping the scope and goal of assignments clear and setting up realistic time tables, young designers can concentrate on their creative work. Furthermore, without a meaningful contribution at work, young designers lose interest and creativity; transmitting of meanings, such as joy or environmental aspects, is highly important for the young generation of designers. Open experimentation should be encouraged, and failures not judged. Adaptable working facilities, both for introvert and extrovert, should be made available to ensure a creative space for everyone. Furthermore, the company management or teaching personnel in an educational institution needs to show example in creating the sense of community. If management is not able to think in “we” -form, how could the young designers? At last, important would be to make young designers aware of the different feelings that affect their creativity and how they personally can influence them; how to know themselves better and how to cope with fluctuating feelings.

Selecting a wide variety of potential creativity methods and techniques for the whole organization is advisable, not forgetting the group ideation methods. A mix of old and new methods is advisable; young designers should learn the methods and techniques through practice and find themselves a personalized tool kit, which is aligned with their designer identity. In order to enhance creativity, there needs to be time and possibility also for informal, casual human interaction. For any design task, it is necessary to reserve enough time for gathering information in variety of ways, also outside of the office. Setting up optimal mood should be made possible also at work and at educational institutions, for example through adequate breaks, leisure time facilities and flexible working times. Young designers should be encouraged to this through management example and acceptance.

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Appendix

Appendix 1. Interview outline

Feelings that enhance creativity:

Describe your ideal feelings before starting a creative work?

Which words would best describe these feelings?

Why/how do these keywords help in being more creative?

Can you describe feelings, which undermine your creative thinking?

What are the psychological prerequisites (feelings) for high creativity in a working environment for a young designer?

What are the conflicting factors (feelings) for creativity in a working environment for a young designer?

Which of the following adjectives would you select as the prerequisite for young designer´s creativity (select 4)? (see Appendix 2)

Could you paint your own creative space? (paper and pens are provided)

Could you paint the creative space of a young designer? (paper and pens are provided)

Methods and techniques that enhance creativity:

Which methods and techniques are you using to support the ideation and creativity in design?

Why are these methods working well?

Are there any methods or techniques, that young designers have introduced to you?

How do these differ from the traditional ones?

Which methods and techniques should young designers use?

How useful do you find (for you and for young designer): reframing, brainstorming, mood board, customer journey mapping, co-design workshop, doing mockups, video prototyping?

Are you allocating time for creativity boosting methods and tools?

What limits the use of creativity methods and tools?

Can a young designer accomplish more challenging tasks if she has knowledge on creativity methods and techniques?

Which of the following icons would best enhance the creativity of a young designer (select 3)? (see Appendix 3) - Why did you select the icon?

Appendix 2. Prerequisites for creativity

Which of the following adjectives would you select as the prerequisite for young designer´s creativity (select 4)?

Self-confident	Anxious
Excited	Bored
Irritated	Open-minded
Curious	Relaxed
Sad	Fearless
Passionate	Reserved
Restless	Stressed out
Insecure	Alert
Cheerful	Angry

Appendix 3. Icon selection for enhancing creativity

Which of the following icons would best enhance the creativity of a young designer (select 3)?

Appendix 4. Prerequisites for creativity, results: number of votes in black (students) and grey (experienced interviewees)

Self-confident	3, 1	Anxious	
Excited	5, 4	Bored	1
Irritated	1	Open-minded	4, 5
Curious	1, 4	Relaxed	2
Sad		Fearless	1
Passionate	3, 3	Reserved	
Restless		Stressed out	
Insecure		Alert	2, 3
Cheerful	3	Angry	